

WHAT IS CLAIMED IS:

1. A method of bonding a cover plate over OLED devices formed on a surface of a device substrate wherein each one of the OLED devices includes at least one electrical interconnect area, comprising:
 - a) providing a flow-preventing pattern on a surface of the cover plate or the OLED devices absent from the electrical interconnect areas of the OLED devices to prevent flow of a flowable adhesive material into at least the outermost portions of such interconnect areas;
 - b) dispensing a selected amount of a flowable curable adhesive material on the surface of the cover plate or the OLED devices in registration with the flow-preventing pattern; and
 - c) engaging the cover plate in alignment with the substrate and curing the adhesive material.

2. A method of bonding a cover plate over a plurality of encapsulated top-emitting OLED devices formed on a surface of a device substrate wherein each one of the plurality of OLED devices includes a pixelated display area and at least one electrical interconnect area, comprising:
 - a) providing a flow-preventing pattern on a surface of the cover plate or a surface of the OLED devices and at least at positions corresponding to positions of the electrical interconnect areas of the OLED devices to prevent flow of a flowable adhesive material into at least outermost portions of such interconnect areas;
 - b) dispensing a selected amount of a flowable curable adhesive material on the surface of the cover plate or a surface of the OLED devices in registration with the flow-preventing pattern;
 - c) engaging the cover plate in alignment with the device substrate so that the selected amount of the flowable adhesive material flows to spread to a nearest edge or to nearest edges of the flow-preventing pattern and over the pixelated display area of each one of the plurality of OLED devices and

being prevented from flowing or spreading into the flow-preventing pattern so that outermost portions of the interconnect areas are free from any adhesive material;

d) curing the spread adhesive material to provide uniform bonding between the cover plate and at least the pixelated display area of each OLED device, thereby achieving a structural buffer layer; and

e) singulating the OLED devices and the bonded cover plate to provide individual top-emitting OLED devices having a bonded cover plate and permitting access to the at least one electrical interconnect area for attaching electrical leads thereto.

3. The method of claim 2 wherein element a) includes providing the flow-preventing pattern by forming dams.

4. The method of claim 2 wherein element c) includes engaging without externally applied forces.

5. The method of claim 2 wherein forming dams includes dispensing a pattern of a substantially viscous and curable adhesive material having a viscosity in a range from 25,000 to 250,000 cp.

6. The method of claim 5 wherein dispensing the pattern includes dispensing a plurality of unidirectional dams, a plurality of closed rectilinear dams, a plurality of partially open rectilinear dams, or a plurality of perpendicular sets of dams.

7. The method of claim 2 wherein element b) includes dispensing a pattern of a flowable adhesive material having a viscosity in a range from 50 to 1,000 cp.

8. The method of claim 7 wherein dispensing the pattern includes dispensing a line pattern or a dot pattern.

9. The method of claim 2 wherein element d) includes directing curing radiation at the spread adhesive material through the cover plate.

10. The method of claim 6 further including curing the substantially viscous curable adhesive material by directing curing radiation at the dams through the cover plate.

11. The method of claim 2 wherein element a) includes providing the flow-preventing pattern by forming grooves.

12. The method of claim 11 further including forming grooves having substantially flat bottom surfaces.

13. The method of claim 11 further including forming a plurality of unidirectional grooves, or a plurality of rectilinear sets of grooves.

14. The method of claim 2 further including dispensing the adhesive material at positions approximately centered with respect to the pixelated display areas of the OLED devices.

15. The method of claim 2 further including concurrently engaging and heating the cover plate and the OLED devices to a temperature which facilitates spreading of the flowable adhesive material, said temperature being insufficient to cause thermal curing of the flowable adhesive material or of the substantially viscous material forming the flow-preventing dam patterns.

16. An encapsulated top-emitting OLED device having a transparent cover plate bonded thereover by a transparent structural buffer layer and made by the method of claim 1.

17. A method of bonding a cover plate over a plurality of encapsulated bottom-emitting-OLED devices formed on a surface of a device substrate wherein each one of the plurality of OLED devices includes a pixelated display area and at least one electrical interconnect area, comprising:

a) providing a flow-preventing pattern on at least a surface of the cover plate and at least at positions corresponding to positions of the electrical interconnect areas of the OLED devices to prevent flow of a flowable adhesive material into at least outermost portions of such interconnect areas;

b) dispensing a selected amount of a flowable curable adhesive material on the surface of the cover plate in registration with the flow-preventing pattern;

c) engaging the cover plate in alignment with the device substrate so that the selected amount of the flowable adhesive material flows to a nearest edge or to nearest edges of the flow-preventing pattern and at least over the pixelated display area of each one of the plurality of OLED devices and being prevented from flowing or spreading into the flow-preventing pattern so that outermost portions of the interconnect areas are free from any adhesive material; and

d) curing the spread adhesive material to provide uniform bonding between the cover plate and at least the pixelated display area of each OLED device on the device substrate, thereby achieving a structural buffer layer.

18. The method of claim 17 further including singulating the device substrate and the bonded cover plate to provide individual bottom-emitting OLED devices having a bonded cover plate and permitting access to the at least one electrical interconnect area for attaching electrical leads thereto.

19. An encapsulated bottom-emitting OLED device having a cover plate bonded thereover by a structural buffer layer made by the method of claim 18.